

**ZELOTYPIA STACYI SCOTT (LEPIDOPTERA: HEPIALIDAE)
– A CONSERVATION PERSPECTIVE**

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Abstract

The status of *Zelotypia stacyi* Scott in Queensland is examined and its apparent rarity reviewed. Additional biological notes are included.

Introduction

The bentwing swift moth, *Zelotypia stacyi* Scott (Fig. 1), is the largest Australian hepialid, with adult female wingspans stated to approach 200 mm (Froggatt 1923), 225 mm (McKeown 1942) or 250 mm (Common 1990). The last recorded New South Wales specimen is believed to have been collected in 1966 (Chadwick 1983). In Queensland six specimens are known from literature (Chadwick 1983, Anonymous 1985). Four of these were collected over a hundred years ago, the remaining two more recently by the authors and Judy Grimshaw. This would suggest extreme rarity. However, almost 20 more specimens are known to have been collected during a four year period from 1978, in the Main Range area of southern Queensland (Hoffmans Falls at Gambubal and Mt Develin: Chadwick 1990, D. Lane pers. comm.). In central New South Wales, more unpublished collections occurred in the 1990s (C. Pratt pers. comm.).

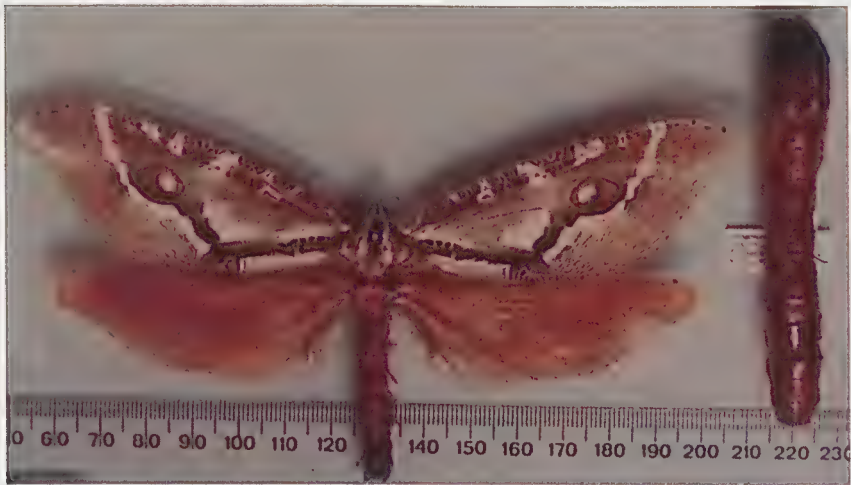


Fig. 1. *Zelotypia stacyi* adult male and exuvium (pupal shell) collected near Goomburra, Queensland.

Discussion

A male of *Z. stacyi*, with a wingspan of 160 mm, was collected near Goomburra, Queensland by M. Hockey and M. De Baar on 21 March 1985 (Fig. 1). On a subsequent field trip to the same site on 1 April 1985, the authors extracted a large larva measuring 70 mm and a pupal exuvium measuring 88 mm from the trunks of *Eucalyptus tereticornis*; numerous exit holes were noted. A pupal shell (damaged but measuring about 70 mm) was extracted from a small *Eucalyptus tereticornis* (Myrtaceae) at Gambubal, near Warwick, on 9 August 1985, again by M. Hockey and M. De Baar. We have also noted exit holes east of Cunningham's Gap in southern Queensland, along the old Cunningham's Gap road.

Tree trunk exit holes indicate that *Z. stacyi* is not as rare as has been assumed. Based on the number of exit holes present in southern Queensland habitats between Goomburra and Gambubal, it is surprising that specimens are not seen more frequently. The larvae bore in branch stems and trunks, mainly of *Eucalyptus tereticornis*, *E. grandis* and *E. saligna*, and may approach 130 mm in length. Froggatt (1923) noted that grey gums, *Eucalyptus punctata*, were attacked in the Gosford district of New South Wales. Olliff (1887) recorded one larva, bred to an adult, from 'black apple tree' [believed to be *Achras australis*, now *Planchonella australis* (Sapotaceae)]. Larvae have also been recorded occasionally damaging young trees of *Eucalyptus grandis* grown for paper pulp in northern New South Wales (Common 1990). According to the New South Wales Forest Commission, *Z. stacyi* is listed among 'the most damaging insects in eucalypt forests' (Stone 1991).

Larval duration is probably at least three years, but possibly up to six years (Froggatt 1923, Chadwick 1990). Adults have a limited emergence period, mainly occurring between February and April, which is probably dependent on specific weather conditions. Froggatt (1923) stated that larvae pupating in December will emerge in March and the pupa is very active days before emergence, pushing out the protective wad. Emergences generally occurred around 3 pm [1500 h] during March in the Newcastle district of New South Wales (Froggatt 1907). Chadwick (1990) summarised various authors' statements about the late afternoon timing of emergences. Middleton (1941) stated that emergences are almost always from 3.30-5.30 pm [1530-1730 h]. Adults are very secretive, are seldom observed and appear reluctant to fly to light traps.

Our observations in the Goomburra and Mt Develin areas (Main Range, southern Queensland) indicate that black cockatoos (Psittacidae: *Calyptorhynchus* spp.) rip open *Z. stacyi* tunnels, causing some destruction in localised patches, when populations of the moth are most active. Middleton (1941) also noted that black cockatoos are destructive to immatures of this moth.

Zelotypia stacyi has been collected northwards from Cambewarra Mt north of Nowra (Middleton 1941), the Newcastle district (Froggatt 1923), Gosford, Taree, Tyringham via Dorrigo (Middleton 1941) and Tooloom Scrub [noted in E.J. Dumigan collection] in New South Wales and from the Main Range area from Goomburra to Gambubal (Anonymous 1985, M. Hockey and M. De Baar collection data, D. Lane pers. comm.) in southeastern Queensland. The type locality is Chatham near Manning R. and Taree, New South Wales (Scott 1869). A female specimen, with a wingspan of 230 mm, was collected at Binna Burra in the McPherson Range, SE Queensland on 10 March 1997, after a period of rain (G.B. Monteith pers. comm.).

After observations over many field trips, we noted that larval-activity areas shift over the larger region, thus giving a perception of population crashes if research is maintained in a small area. This suggests that large areas of untouched forest are needed to maintain healthy *Z. stacyi* populations, as is the case in southern Queensland along the border ranges through to the Main Range. Almost the entire area of the Queensland distribution of *Z. stacyi* lies within large tracts of connecting State Forests and National Parks along the border ranges and the Main Range, thus providing a relatively safe haven in that State. However, this could be a threatening factor in some New South Wales localities. The phenomenon of larval-activity area-shifts over the larger region has been noted for another hepialid, *Aenetus mirabilis* Rothschild, in northern Queensland by David Lane (pers. comm.).

More research is required before conclusions can be made about this moth and its rarity. However, because larvae are trunk and occasionally branch borers and adults are short lived and seldom observed, only occasionally flying to weak light and emerging in the late afternoon during rain events and mainly only during two or three months, research projects are consequently difficult.

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